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Spinal Manipulation May Help Reduce Spinal Degenerative Joint Disease and Disability, Part I

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Has the hypomobile manipulable joint lesion been demonstrated to exist?

Historically the manipulable joint lesion has, from the beginning of the chiropractic profession, been described as a painful stiff joint.^{1,2} Joint stiffness, commonly called hypomobility (also known in the chiropractic profession as "fixation") has become by consensus one of the most important aspects of the manipulable joint lesion in the professions of chiropractic, osteopathy, and manual medicine.^{3,4} Nearly 100 years of clinical agreement between three separate professions supports the existence of such a lesion although research now supports its existence.

Loss of full, or global, range of motion in the lumbar or cervical spines is an indirect proof that the segmental hypomobile manipulable vertebral joint lesion exists, because it is a fact that loss of full global range of motion occurs and such stiffness is considered an objective factor in chronic back pain.⁵ therefore, even if this decreased range of motion is a mixture of hypermobile and hypomobile joints (i.e., a mixture of loose and stiff joints) there must be intervertebral hypomobility for global hypomobility to exist.

Randomized controlled trials of manipulation documenting decreased global range of motion, and posttreatment global range of motion are growing.⁶⁻¹²

A meta-analysis of clinical trials of spinal manipulation performed by Anderson et al., clearly and strongly demonstrated that spinal manipulation is effective in restoring or increasing global, and therefore segmental lumbar mobility. Mead et al., documented postmanipulation treatment restored or increased lumbar mobility: data proving that the hypomobile manipulable joint lesion must have existed prior to treatment, and that manipulation restored to these hypomobile joints fuller mobility (Fig 1.).⁶ Other studies have documented similar results. Nansel and his associates have demonstrated in three, multiply blinded, controlled studies, in which goniometer measurements confirmed cervical range of motion or global end

range asymmetries or hypomobility, that after chiropractic high velocity low amplitude manipulation, statistically significant increased mobility was restored to the global and therefore segmental hypomobility areas: proof that global and therefore segmental hypomobility was returned to more normal mobility by manipulation.¹⁴⁻¹⁶

Fig. 1	
Lumbar Flexion (cm at 6 weeks)	
Treated in Hospital	Treated by Chiropractor
62 cm	85 cm
(302 patients)	(344 patients)
Adapted from Meade et al. 6	

Hvidd claimed that prior to manipulation global and therefore segmental hypomobility could be documented by cervical spine stress x-rays; that postmanipulation, global and therefore segmental hypomobility, was returned to fuller or more normal mobility.¹⁷ Betge and Leung performed cineradiographic studies and claimed to have documented vertebral joint hypomobility and postmanipulation, to have observed restoration of full or fuller mobility.^{18,19} Jirout examined 250 patients with pre and posttreatment stress x-rays and claimed that those with hypomobility who received manipulation had improved, fuller, or restored mobility.²⁰ Yeoman utilized 58 case studies performing blinded pre and postmanipulation measurements to document against previously defined normal values that post manipulation mobility was significantly greater than premanipulation data. Yeoman used templating techniques with extension and flexion cervical stress x-rays to document the existence of segmental hypomobility and restoration of mobility to hypomobile joints as well as secondary normalization of hypermobility (Fig. 2).²¹ Does the hypomobile manipulable joint lesion exist? And can mobility be restored by manipulation? The answer appears to be yes.

Figure 2		
Average intersegmental motion before and after therapy.		
Values for motion or change are ratios of the amount of glide or tilt (horizontal movement) over the sagittal mid-body diameter.		
Two examples given:		
Male Cases	C2	C3
Pre-SMT (average)	0.26	0.27
Post-SMT (average)	0.37	0.37
Normal Values:	C2	C3
	0.33	0.44
Adapted from Yeoman. ²¹		

Can the hypomobile manipulable joint lesion be diagnosed?

Motion palpation as a diagnostic test to determine if a hypomobile joint exists shows mixed results. Some areas of the spine demonstrate degrees of intra and interexaminer reliability and others do not.²² Motion palpation of the spine and sacroiliac joints demonstrate, on balance, marginal to poor interexaminer reliability and good to moderate intrarater reliability.²³⁻²⁸ Manual palpation for vertebral misalignment and muscle tension appears to be unreliable.²³ Studies utilizing symptomatic patients point toward greater interexaminer reliability when assessing for osseous and paraspinal soft tissue tenderness²³ or tenderness upon palpation of accessory posterior or anterior (joint play) movements.²⁹ In fact, the earliest chiropractic palpation techniques, dating back to founder D.D. Palmer, stressed posterior malalignment, and based upon this, lack of posterior to anterior movement.^{30,31}

As previously noted, stress radiography shows some promise as a diagnostic tool for determining segmental hypomobility,²¹ as does the goniometer; the goniometer also being capable of documenting restoration of mobility.¹⁴⁻¹⁶ As Keating et al., have pointed out, there is a need to evaluate motion palpation using symptomatic, not asymptomatic patient population (as most previous studies have used asymptomatic student populations), and it is therefore too early to draw the firm conclusion as some have that motion

palpation is of no value in diagnosing the hypomobile manipulable joint lesion.²³ It may well turn out that a combination of diagnostic tests such as palpation for stiffness tenderness, stress radiography, and goniometer measurements will best diagnose the hypomobile manipulable joint lesion. The ability to objectively diagnose the hypomobile manipulable joint lesion has improved but there is still a great deal of room for improvement.

Editor's note: Part II will appear in the April 22 issue.

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